UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/899,410	07/05/2001	James O. Farmer	08286.105003	3294

7590 11/19/2002

Steven P. Wigmore, Esq.
KING & SPALDING
45th Floor
191 Peachtree Street, N.E.
Atlanta, GA 30303

EXAMINER	
BELLO, AGUSTIN	
ART UNIT	PAPER NUMBER
2633	

DATE MAILED: 11/19/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/899,410	FARMER ET AL.	
	Examiner	Art Unit	
	Agustin Bello	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 September 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-52* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-52* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in-
> (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
> (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

2. Claim 1, 2, 5, 11, 12, 14, 15, 18-21, 24, 26, 27, 31, 32, 33, 35, 37, 39, 40, 41, 45-48, 51, 52, is rejected under 35 U.S.C. 102(e) as being anticipated by Pangrac (U.S. Patent Application Publication No. 2001/0030785).

Regarding Claims 1, 21, 24, and 41 Pangrac teaches an optical network system comprising: a data service hub (reference numeral 101 in Figure 1) ; at least one optical tap (reference numeral 105 in Figure 1) for dividing a downstream optical signal between one or more subscribers of the optical network system; at least one subscriber optical interface connected to the optical tap (reference numeral 139 in Figure 1) for receiving the downstream optical signal from and sending upstream optical signals to the at least one optical tap; a laser transceiver node (reference numeral 103 in Figure 1) disposed between the data service hub and the optical tap, for communicating optical signals between the data service hub and the optical tap, and for apportioning bandwidth that is shared between groups of subscribers connected to a respective optical tap of the optical network system (paragraph 0015-0016), and one or more

optical waveguides connected between respective optical taps and the laser transceiver node (reference numeral 133, 135 in Figure 1), for carrying the upstream optical signals and the downstream optical signals, whereby the number of the waveguides is minimized while optical bandwidth for subscribers is controllable by the laser transceiver node in response to subscriber demand (paragraph 0016).

Regarding Claim 2, Pangrac teaches the optical network system of claim 1, wherein the laser transceiver node further comprises an optical tap routing device (reference numeral 119 in Figure 1) for apportioning the bandwidth between subscribers of the optical network system.

Regarding Claims 5 and 27, Pangrac teaches the optical network system of claim 1, wherein the laser transceiver node accepts gigabit Ethernet optical signals from the data service hub and partitions the Ethernet optical signals into a predetermined number of groups (paragraph 0010).

Regarding Claims 11 and 37, Pangrac teaches that the laser transceiver node further comprises an optical tap routing device that allocates additional or reduced optical bandwidth to at least one subscriber optical interface relative to other subscriber optical interfaces in the optical network system (paragraph 0054).

Regarding Claim 12, Pangrac teaches that the laser transceiver node comprises an optical tap routing device (reference numeral 501 in Figure 5) that manages upstream and downstream optical signal protocols (paragraph 0060).

Regarding Claims 14, 39 and 51, Pangrac teaches the optical network system of claim 1, wherein data bit rates for the upstream and downstream optical signals are substantially symmetrical (paragraph 0061).

Regarding Claims 15, 40, and 52, Pangrac teaches that the optical waveguides are capable of handling rates up to 450 Mbps (inherent in the transmission of up to Gbps Ethernet signals from the data service hub to the transceiver node via optical fibers.

Regarding Claims 18 and 26, Pangrac teaches that each optical tap propagates upstream and downstream optical signals in addition to downstream RF modulated optical signals (see Figure 3).

Regarding Claim 19, Pangrac teaches that each subscriber optical interface comprises an analog optical receiver, a digital optical receiver, and a digital optical transmitter (reference numeral 139-1 in Figure 1 and (paragraph 0019, 0022, 0037, 0055, claim 77).

Regarding Claim 20, Pangrac teaches multiple sets of waveguides that carry upstream and downstream information between the transceiver and data service hub (paragraph 0038).

Regarding Claims 31 and 45, Pangrac teaches he method of claim 24, further comprising the step of providing one of video, telephone, and internet services via the optical signals (see Figure 1).

Regarding Claims 32 and 46, Pangrac teaches the method of claim 24, further comprising the steps of: splitting combined downstream optical signals with at least one optical tap; and propagating the split downstream optical signals to at least one subscriber along at least one optical waveguide (reference numeral 105, 139 in Figure 1).

Regarding Claims 33, 35, and 47, Pangrac teaches connecting between one and sixteen subscribers to a respective optical tap (see Figure 1).

Regarding Claim 48, Pangrac teaches that the transceiver node is positioned near the customer premises (paragraph 0038).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 3, 4, 7-10, 17, 23, 25, 29, 30, 34, 36, 43, 44, 49, and 50, as best understood by the examiner in view of the 112 rejection above, are rejected under 35 U.S.C. 103(a) as being unpatentable over Pangrac.

Regarding Claim 3, Pangrac teaches the optical network system of claim 1, wherein the laser transceiver comprises at least one multiplexer (reference numeral 425 in Figure 4) coupled to an optical tap routing device; at least one optical transmitter connected to the at least one multiplexer (reference numeral 421 in Figure 4), for transmitting downstream optical signals received from the data service hub to at least one subscriber optical interface of the optical network system; and at least one optical receiver (reference numeral 421 in Figure 4), for receiving and converting upstream optical signals from at least one subscriber optical interface of the optical network system. Pangrac differs from the claimed invention in that in the Pangrac fails to specifically teach that the receiver is connected to each multiplexer. However, Pangrac does teach that each receiver of the system is connected to a multiplex device, a device which separates the signals received from the subscribers (reference numeral 431 in Figure 4). Furthermore, the combination of the multiplex device and the receiver functions to receive and convert and upstream signal from the subscribers, much like that of the claimed invention. One

skilled in the art would clearly have recognized that it would have been possible to connect the receiver of the node to each multiplexer of the system in order to multiplex the plurality of signals from the subscribers prior to transmission to the data service hub. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have connected the optical receiver to each multiplexer in order to multiplex the plurality of signals from the subscribers prior to transmission to the data service hub.

Regarding Claim 4, Pangrac teaches the optical network system of claim 1, wherein the laser transceiver node further comprises at least one diplexer (paragraph 0005, 0013, 0063, 0084), each diplexer combining downstream RF modulated signals received from the data service hub (reference numeral 301 in Figure 3, paragraph 85) with the downstream optical signals, each diplexer being connected to a respective optical waveguide (inherent). Pangrac differs from the claimed invention in that Pangrac fails to specifically teach that each diplexer is connected to the at least one optical transmitter and optical receiver and further that the diplexer combines RF modulated optical signals with other downstream signals. However, Pangrac teaches that other types of service providing device (i.e. video on demand server, television server) can be connected from the data service hub and combined with other downstream signals via a diplexer to a subscriber (paragraph 0083-0084, 0088). Furthermore, as discussed above, Pangrac teaches the use of optical transmitters and receivers (see Figure 4, 5) to transmit and receive information to and from the subscribers. The teachings of Pangrac would have suggested to one skilled in the art that it is possible to combine services to the subscriber via a diplexer and transmit those services via the optical transmitter and receiver as shown in the figures. Therefore, it would have been obvious to one skilled in the art at the time the invention

was made to have combined RF modulated optical signals with other downstream optical signals via the use of diplexers, optical transmitters, and receiver as taught by Pangrac.

Regarding Claims 7, 8, 29, 30, 43, and 44, Pangrac teaches the system of claim 1, but differs from the claimed invention in that Pangrac fails to specifically teach that the laser transceiver is mountable on a strand in an overhead plant environment or housed within a pedestal in an underground plant environment. However, one skilled in the art would clearly have recognized that it would have been possible to place the transceiver node in either environment without departing from the scope of the invention of Pangrac. Placing a transceiver in such environments is well known in the art and would have been obvious to one skilled in the art at the time the invention was made.

Regarding Claim 9, Pangrac teaches the optical network system of claim 1, but differs from the claimed invention in that Pangrac fails to specifically teach that the distance between the laser transceiver node and the data service hub comprises a range between zero and eighty kilometers. However, Pangrac teaches that communication system provides many advantages regardless of distance and contemplates technology that enables increased distances between system elements (paragraph 0047). One skilled in the art would clearly have recognized that it would have been possible to connect the data service hub within the distance claimed by the applicant. It is extremely well known in the art to connect network elements within the range claimed by the applicant, and Pangrac suggests this by teaching that the distance between two elements in the system are placed at a distance of one thousand feet, well within the range claimed by the applicant. Therefore, it would have been obvious to one skilled in the art at the

time the invention was made to have connected the data service hub to the transceiver node so that it fell within the range claimed by the applicant.

Regarding Claims 10 and 36, Pangrac teaches the system of claim 1, wherein the transceiver node comprises at least one optical transmitter but differs from the claimed invention in that Pangrac fails to specifically teach that the laser transceiver node comprises at least one of a Fabry-Perot laser, a distributed feedback laser, and a vertical cavity surface emitting laser (VCSEL). However, Fabry-Perot laser, a distributed feedback laser, and a vertical cavity surface emitting laser (VCSEL) are all well known types of lasers that are readily available to one skilled in the art. Furthermore, one skilled in the art would clearly have recognized that it would have been possible to incorporate any of the types of laser claimed by the applicant. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have chosen the laser in the transceiver node to be one of a Fabry-Perot laser, a distributed feedback laser, and a vertical cavity surface emitting laser (VCSEL).

Regarding Claims 17, 23, 34 and 49, Pangrac fails to specifically teach that the optical service taps are connected one another. However, one skilled in the art would clearly have recognized that it would have been beneficial to connect optical taps in order to allow communication between subscribers that receive signals via different taps. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have connected the taps that service different subscriber groups in order to allow communication between subscribers on different taps.

Regarding Claims 25 and 50, Pangrac fails to specifically teach that the subscribers are assigned to the respective individual multiplexers. However, Pangrac teaches that a plurality of

subscribers are assigned to a multiplexer. One skilled in the art would clearly have recognized that in an expanded network of Pangrac, a plurality of subscribers would have been assigned to a plurality of multiplexers, each subscriber assigned to a respective multiplexer. Furthermore, duplication of the essential working parts of an invention does not constitute patentable material *St. Regis Paper Co. v. Bemis Co., 193 USPQ 8.* It would have been obvious to one skilled in the art at the time the invention was made that if the network of Pangrac were expanded to include a plurality of transceiver nodes and a plurality of subscriber sites, then each of the subscribers would have been assigned to respective multiplexers.

5. Claims 6, 28, and 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pangrac in view of Faulkner (U.S. Patent No. 4,975,899).

Regarding Claims 6, 28, and 42, Pangrac teaches the system of claim 1, but differs from the claimed invention in that Pangrac fails to specifically teach that the laser transceiver node comprises passive cooling devices in order to operate in a temperature range between -40 degrees Celsius to 60 degrees Celsius. However, the use of such passive cooling devices to maintain the operation of optical components within a certain temperature range are extremely well known in the art and would have been obvious to one skilled in the art. For example Faulkner teaches that heat sinks are used to keep transmitter system cool (column 1 lines 8-16). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to use passive cooling devices such as the heat sink taught by Faulkner in order to keep the transmitter system of Pangrac within the temperature range claimed by the applicant.

6. Claims 13 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pangrac in view of Williams (U.S. Patent No. 5,880,864).

Regarding Claims 13 and 38, Pangrac teaches the limitations of claim 11, but differs from the claimed invention in that Pangrac fails to specifically teach that the protocol for transmission of signals is time division multiple access. However, one skilled in the art would clearly have recognized that it would have been possible to use any of the well known protocols for data transmission including TDMA. Williams, in the same field of endeavor, teaches that it is well known in the art to use a time division protocol to transmit data (column 13 lines 46-65). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have used TDMA protocol to transmit information in the system of Pangrac as taught by Williams.

7. Claims 16 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pangrac in view of Farhan (U.S. Patent No. 6,356,369).

Regarding Claims 16 and 22, Pangrac teaches an optical tap but differs from the claimed invention in that Pangrac fails to specifically teach that the tap comprises at least one optical splitter. However, Pangrac teaches at least one optical splitter that functions to split upstream signals (reference numeral 431 in Figure 4). One skilled in the art would clearly have recognized that it would have been possible to incorporate the splitter in the optical tap as opposed to the transceiver node, thereby allowing the upstream signals to be spilt from downstream signals prior to being transmitted to the transceiver node. Furthermore, Farhan, in the same field of endeavor, teaches that it is well known in the art to use a splitter in a tap in order to split signals (column 3 lines 54-58). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have used a splitter in the tap in order to split the upstream signals from the downstream signals prior to being transmitted to the transceiver node.

Response to Arguments

8. Applicant's arguments filed 9/17/02 have been fully considered but they are not persuasive. The applicant argues Pangrac fails to specifically teach the optical communication system of the claimed invention. However, as seen in Figure 4 it is clear that Pangrac teaches optical system of the claimed invention including communication with a data service hub via optical signals as seen in Figure 5. Although Pangrac teaches the fiber-coax hybrid system as noted by the applicant, Pangrac also clearly teaches the optical system of the claimed invention including each limitation of the claimed by the applicant. For example, in Figure 4 Pangrac teaches a data service hub (101), at least one optical tap (405), at least one subscriber interface (439), a laser transceiver node (103) disposed between the data service hub and the optical tap, and one or more optical waveguides connected between the optical tap and the laser transceiver node (133). Regarding the applicant's assertion that Pangrac fails to specifically teach that bandwidth is shared between groups of subscribers connected to a respective tap, the applicant is directed to paragraphs 0015-0016 which specifically obviate the claimed limitation.

Regarding the applicant's argument against the use of the combination of Pangrac and Williams in teaching TDMA, Pangrac specifically states that source downstream information could have been in any one of many different formats, while Williams teaches the use time division multiplexing, a communication format very similar to TDMA in that both TDMA and TDM both allow for a plurality of conversation to be sent simultaneously in specific time slots. Furthermore, the applicant's use of TDMA as a communication protocol is not novel and would have been obvious to one skilled in the art at the time the invention was made. The teachings of Pangrac and Williams as well as the general knowledge of one skilled in the art of

communication protocols in a plural subscriber environment would have suggested to one skilled in the art that it would have been beneficial to transmit a plurality of signals in an efficient manner, hence the use of TDMA or TDM.

Regarding applicant's argument for claim 24, it is clear that system shown by Pangrac is only an example, and for clarity shows only a single stage of the system. Pangrac specifically teaches that the system can be extended to include a plurality combiners within the transceiver node which interfaces multiple taps (paragraph 0047-0048). Pangrac also teaches that specific services can be requested by subscribers and that a method for delivering the requested service can be provided, inherently through the selection of an appropriate pre-assigned multiplexer in communication with the subscriber and through the division of that downstream signal among the requesting subscriber and subscribers who already have the service. It is clear from Pangrac that in a larger system (e.g. a system containing a plurality of same basic setup taught by Pangrac), that a request from a subscriber for a particular service would have to be fulfilled via location of the tap nearest the requesting subscriber and selection of the pre-assigned multiplexer to that subscriber that would allow the service to reach the subscriber. Furthermore, being that the system would have a single headend that provides all the services, the signals from the headend would have to be divided and sent to the pre-assigned multiplexers in the system in order to reach the subscribers that request certain services.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hale for teaching bandwidth allocation.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Agustin Bello whose telephone number is (703)308-1393. The examiner can normally be reached on M-F 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (703)305-4729. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9314 for regular communications and (703)872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.

AB
November 14, 2002

JASON CHAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600